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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,698	11/09/2001	Paul Berger	C1043/7032	9935
7590 01/13/2004				
Finnegan, Henderson, Farabow, Garrett & Dunner 1300 I Street, NW Washington, DC 20005-3315			EXAMINER LEURIG, SHARLENE L	
			ART UNIT 2879	PAPER NUMBER

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/857,698	Applicant(s) BERGER ET AL.	
	Examiner Sharlene Leurig	Art Unit 2879	

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 November 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-16, 28, 29, 31 and 35 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28, 29, 31 and 35 is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>1003, 1103</u> . | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed on October 23, 2003 has been entered and acknowledged by the Examiner. Claims 1, 13-16, 28, 31 and 35 have been amended and claims 17-27, 30 and 32-34 have been cancelled.

### ***Examiner's Notes***

2. Claim 29 contains a typographical error, wherein the intended phrase --through paths-- is spelled as "though paths". Correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al. (JP 08-222374) (of record) in view of Michaelson, H. "*The work function of the elements and its periodicity*" (of record).

Regarding claim 1, Nakamura discloses a light emissive device comprising a light-emissive region (Figure 1, element 4), a first electrode (2 and 3) located on a viewing side of the light-emissive region for injecting charge carriers of a first type, a second electrode (6) located on a non-viewing side of the light-emissive region for

injecting charge carriers of a second type, and wherein there is a reflectivity-influencing structure (5) located on the non-viewing side of the light-emissive region and including a light absorbent layer comprising an oxide of a metal having a work function of 4.0 eV or less, including metals such as the alkaline earth metals sodium, potassium and calcium (paragraphs 0009-0011).

Nakamura lacks explicit disclosure of the work functions of the metal oxides that can be used for the reflectivity-influencing structure.

Michaelson teaches that the work function of the sodium is equal to 1.75 eV, the work function of potassium is equal to 2.30 eV, and the work function of calcium is equal to 2.87 eV, each of which fits within the claimed range of 3.5 eV or less.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reflectivity-influencing structure of Nakamura, being made of an oxide of sodium, potassium or calcium, to have a work function less than or equal to 3.5 eV, as Michaelson teaches it to be characteristic of these elements.

Regarding claim 2, Nakamura discloses the first electrode (2) is light-transmissive (paragraph 0007).

Regarding claim 3, Nakamura discloses the reflectivity-influencing structure is located on the opposite side of the second electrode from the light-emissive region, where the cathode is interpreted as comprising both an electron injection layer and a metal layer, with the reflectivity-influencing structure formed between these layers (paragraph 0019). Therefore the reflectivity-influencing structure can be said to be on the opposite side of the second electrode from the light-emissive region.

Regarding claim 4, Nakamura discloses the second electrode is partially light-transmissive (paragraph 0015).

Regarding claim 5, Nakamura discloses the thickness of the second electrode can be 10 nm, which is less than 30 nm (paragraph 0015).

Regarding claim 6, Nakamura discloses the reflectivity-influencing structure is adjacent the second electrode (paragraph 0019).

Regarding claim 7, Nakamura discloses the second electrode provides the reflectivity-influencing structure, since it is couched within the second electrode in one embodiment (paragraph 0019).

Regarding claims 8 and 9, Nakamura discloses the second electrode comprises an oxide of a low-work function metal such as aluminum (paragraph 0015).

Regarding claim 10, Nakamura discloses the reflectivity-influencing structure is effective to absorb light emitted from the light-emissive region that reaches it through the second electrode or incident light (paragraphs 0008 and 0025).

Regarding claim 11, Nakamura discloses the presence of the reflectivity-influencing structure adjacent the second electrode renders the second electrode substantially non-reflective to light emitted from the light-emissive region or incident light, since the presence of the reflectivity-influencing structure reduces the internal reflection of light (paragraph 0025).

Regarding claim 12, Nakamura discloses the second electrode comprises an electrically conductive material, since it is made of metal (paragraph 0013).

Regarding claim 13, Nakamura discloses the light-emissive region comprises an organic light-emissive material (paragraph 0001).

Regarding claims 14 and 15, Nakamura discloses the light-emissive region comprises a polymer light-emissive material, such as a conjugated polymer material (paragraph 0016).

Regarding claim 16, Nakamura discloses the reflectivity-influencing structure is electrically conductive (paragraph 0005).

#### ***Allowable Subject Matter***

5. Claims 28, 29, 31 and 35 are allowed.

6. The following is an examiner's statement of reasons for allowance: claim 28 was objected to as being allowable but dependent on a rejected base claim in the previous office action. Applicant amended the claim to be independent. Therefore claim 28 and its dependents are hereby allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection necessitated by the amendment.

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (703)305-4745. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703)305-4794. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7382.


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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Sharlene Leurig

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